

A-P-64

CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fault Evaluation Report FER-35

April 1, 1977

1. Name of faults: "Baseline" fault and "Marre Canyon" fault.
2. Location of faults: Los Olivos, Santa Ynez, Figueroa Mountain and Lake Cachuma<sup>s</sup> quadrangles, Santa Barbara County (see figure 1).
3. Reason for evaluation: Located in the 1976 study area of the 10-year program for fault evaluation in the state.
4. List of references:
  - a) Dibblee, T.W., 1966, The geology of the central Santa Ynez Mountains, Santa Barbara County: California Division of Mines and Geology, Bulletin 186, 99 p., plate 3 (scale 1:62,500).
  - b) Ziony, J.I., Wentworth, C.M., Buchanan-Banks, J.M., and Wagner, H.C., 1974, Preliminary map showing recency of faulting in coastal southern California: U.S. Geological Survey Map MF-585.
  - c) Sylvester, A.G., 1976, Personal communication of March 28, 1976.
  - d) NASA, 1973, U-2, False color IR serial photographs, flight no. 73-194, roll 01541, frame 6523.
  - e) Hart, E.W., 1976, Personal communication of March 25, 1976.
  - f) Jennings, C.W., 1975, Fault Map of California: California Division of Mines and Geology, Geologic Data Map Series, Map no. 1.
5. Summary of available data:
  - a) The so-called Baseline fault extends from Santa Cruz Bay (above Lake Cachuma) on the southeast for eight miles to the northwest near the town of Los Olivos (see plate 1). The geometry of the fault is not

known except to say that the north side of the fault is said to be down relative to the south side (Sylvester, personal communication, 1976).

The fault is shown by Ziony, et al. (1974) and Jennings (1975), to be a questioned Quaternary fault. The fault's existence is based on air photo reconnaissance by Sylvester in the early 1970's. Dibblee (1966) did not map a fault in this locality. He shows a depositional contact between north-dipping Paso Robles Formation (lower Pleistocene) and older Quaternary alluvium. Sylvester felt that this was a fault contact. He also states that the southeast end of the fault shows good evidence of late Pleistocene movement. Here, older alluvium on the south side of the fault is 25 feet higher than the older alluvium on the north side.

b) The "Marre Canyon" fault is shown by Sylvester to extend from Marre Canyon northwest for nearly two miles. The fault is based on his air photo reconnaissance of the area. He shows the fault in the same place <sup>where</sup> Dibblee maps a depositional contact between south-dipping Paso Robles Formation on the north and older Quaternary alluvium on the south. Sylvester postulates that this fault is a north-dipping thrust fault. This fault is not mapped or described anywhere else in the available literature.

#### 6. Air photo interpretation:

NASA (1973) photos were examined covering the area in the vicinity of Lake Cachuma (see figure 2). Two features are distinct. The "Baseline" fault shows <sup>as</sup> up ~~an~~ a north-facing escarpment bounding the south edge of a two mile wide valley. The "Marre Canyon" fault bounds the north edge of this valley and is not as well-defined as the "Baseline" fault.

## 7. Field observations:

About one half day was spent by me with Earl Hart trying to find these two faults in the field. A brief search in the area east of Happy Canyon along Alisos Avenue (locality 1, plate 1) <sup>proved fruitless</sup> in finding the "Baseline" fault. The Santa Aqueda Creek banks (locality 2) were examined for faulting, but no fault features were seen. However, only recent alluvium was exposed in the creek walls. To the west (locality 3) a modified, north-facing scarp could be fault related, but could not be evaluated.

The west side of Marre Canyon was examined by Hart and me for evidence of faulting in the Quaternary terrace deposits and Paso Robles Formation exposed in the canyon walls (Locality 4). Hart states that "steep dipping Paso Robles sands are cut by minor faults dipping steeply to the south. The south side is apparently down. The Quaternary terrace deposits in the area do not appear to be faulted."

## 8. Conclusions:

Neither the "Baseline" nor the Marre Canyon fault can be conclusively shown to be significant recent faults. The prominent escarpments that were observed on air photos could be erosional features or resistant beds in the Paso Robles Formation. The only faults seen so far are the minor ones that cut the Paso Robles Formation in Marre Canyon. These faults dip steeply to the south. Sylvester postulated a north-dipping thrust fault here based only on air photo work.

9. Recommendations:

I recommend not zoning the "Baseline" or "Marre Canyon" fault for special studies at this time. However, the fact that these faults, particularly the "Baseline", are such prominent features on air photo bears further study in the field.

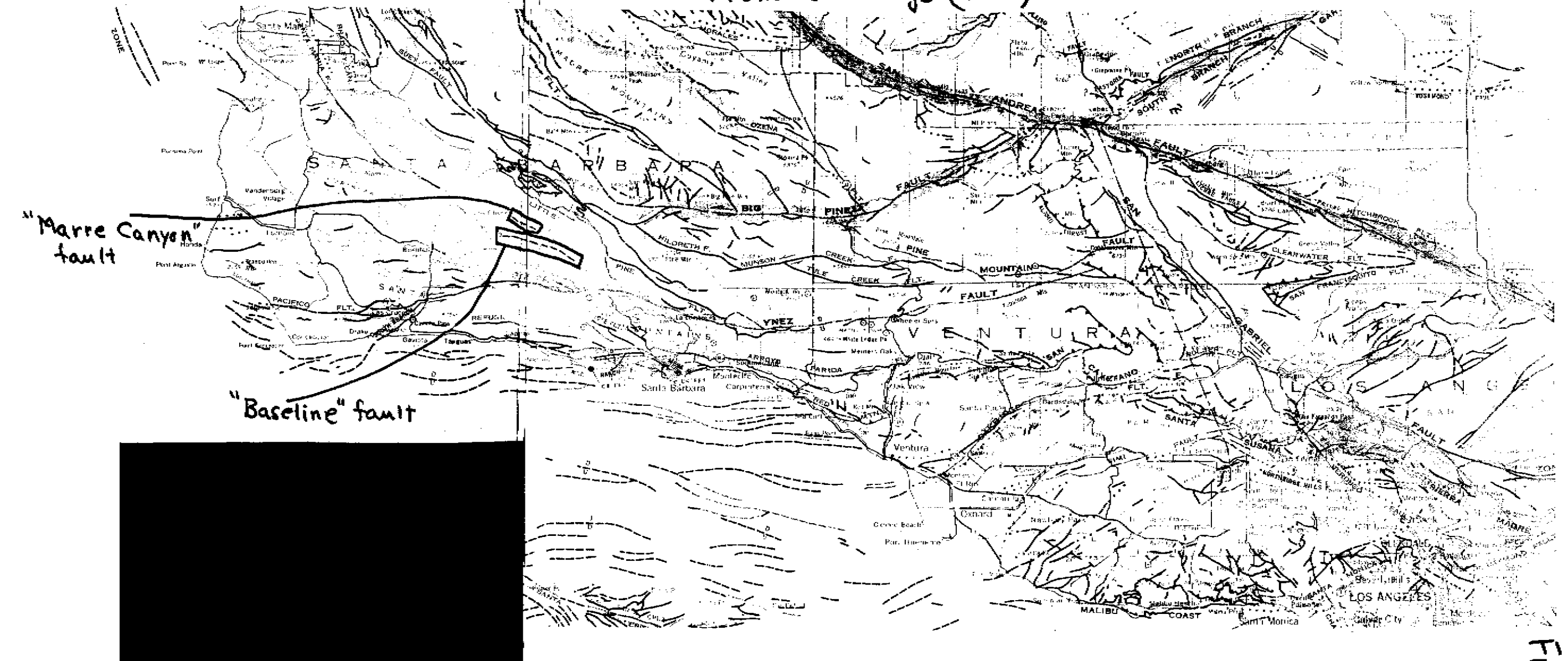
10. Investigating geologist's name; date:

*Edward J. Bortugno*

EDWARD J. BORTUGNO  
Geologist  
April 1, 1977

*I agree with  
recommendations. I would  
think that the Baseline fault, if  
active during the Holocene, would  
show evidence of blocked drainage  
of the southwest flowing stream  
that crosses the escarpment.*  
*EJBH*  
*4/18/77*

Modified  
From Jennings (1975)



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Copy of U-2 Photo Scale 1:100,000

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